

CLAIMS

What is claimed is:

- 1 1. A method of preparing crystal polymorphs of a substance
2 comprising the steps of:
 - 3 a. preparing a supersaturated solution of said substance in a
4 solvent;
 - 5 b. subjecting the supersaturated solution to a wavelength of
6 laser light that is not absorbed by the supersaturated solution for a period of time
7 so as to induce nucleation of at least one crystal of said polymorph;
 - 8 c. growing the crystal of said polymorph to a desired size,
9 wherein said supersaturated solution not affected chemically by the
10 subjecting of said supersaturated solution to the wavelength of laser light, and
11 said polymorph is different than the polymorphs that would nucleate in the
12 absence of the light selected.
- 1 2. The method as claimed in Claim 1, wherein the supersaturated
2 solution is subjected to the laser light until at least a portion of said substance has
3 crystallized into said polymorph.
- 1 3. The method as claimed in Claim 2, wherein supersaturation is
2 achieved by a method selected from the group consisting of cooling, heating,
3 solvent evaporation, and altering solvent composition.
- 1 4. The method as claimed in Claim 3, wherein the solvent is selected
2 from the group consisting of organic solvents, inorganic solvents, and
3 supercritical solvents.
- 1 5. The method as claimed in Claim 4, wherein the solvent is water.
- 1 6. The method as claimed in Claim 5, wherein the substance is
2 selected from the group consisting of pharmaceuticals, amino acids, peptides,
3 proteins, carbohydrates, amines, alkanes, alkenes, alkynes, aromatics,
4 heterocyclic compounds, alcohols, organometallics, and carboxylic acids.
- 1 7. The method as claimed in Claim 6, wherein the laser light is pulsed.
- 1 8. The method as claimed in Claim 7, wherein the laser light pulses at
2 10 pulses per second.

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1 9. The method as claimed in Claim 8, wherein the supersaturated
2 solution is subjected to the laser light for a period of between 0.1 second and 1
3 hour.

1 10. The method as claimed in Claim 9, wherein the laser light is in the
2 near infrared wavelengths.

1 11. A method of producing crystal polymorph product of a selected
2 substance comprising the steps of:

- 3 a. preparing an aqueous solution of the selected substance;
4 b. supersaturating the aqueous solution of the selected
5 substance by a method selected from the group consisting of cooling, heating,
6 solvent evaporation, and altering solvent composition;
7 c. subjecting the supersaturated aqueous solution of the
8 selected substance to a wavelength of light that is not absorbed by the
9 supersaturated solution for a period of time so as to induce nucleation of at least
10 one crystal of said polymorph;

11 wherein said supersaturated aqueous solution not affected chemically by
12 the selected wavelength of light, and said polymorph is different than the
13 polymorphs that would nucleate in the absence of the wavelength of laser light
14 selected.

1 12. The method as claimed in Claim 11, wherein the substance is
2 selected from the group consisting of pharmaceuticals, amino acids, peptides,
3 proteins, carbohydrates, amines, alkanes, alkenes, alkynes, aromatics,
4 heterocyclic compounds, alcohols, organometallics, and carboxylic acids.

1 13. The method as claimed in Claim 12, wherein the light is a laser
2 beam.

1 14. The method as claimed in Claim 13, wherein the laser beam is
2 pulsed.

1 15. The method as claimed in Claim 14, wherein the laser beam pulses
2 at 10 pulses per second.

1 16. The method as claimed in Claim 15, wherein the supersaturated
2 aqueous solution is subjected to the laser beam for a period of between 0.1
3 second and 1 hour.

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1 17. The method as claimed in Claim 16, wherein the laser beam is in
2 the near infrared wavelengths.

1 18. The method as claimed in Claim 17, wherein the laser beam is a
2 high intensity laser beam.

1 19. A crystal polymorph product of a selected substance manufactured
2 according to the steps of Claim 1.

1 20. A crystal polymorph product of a selected substance manufactured
2 according to the steps of Claim 11.

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